

# **Defense Industrial Base Capability Study Series**

**Defense Acquisition Excellence  
Council**

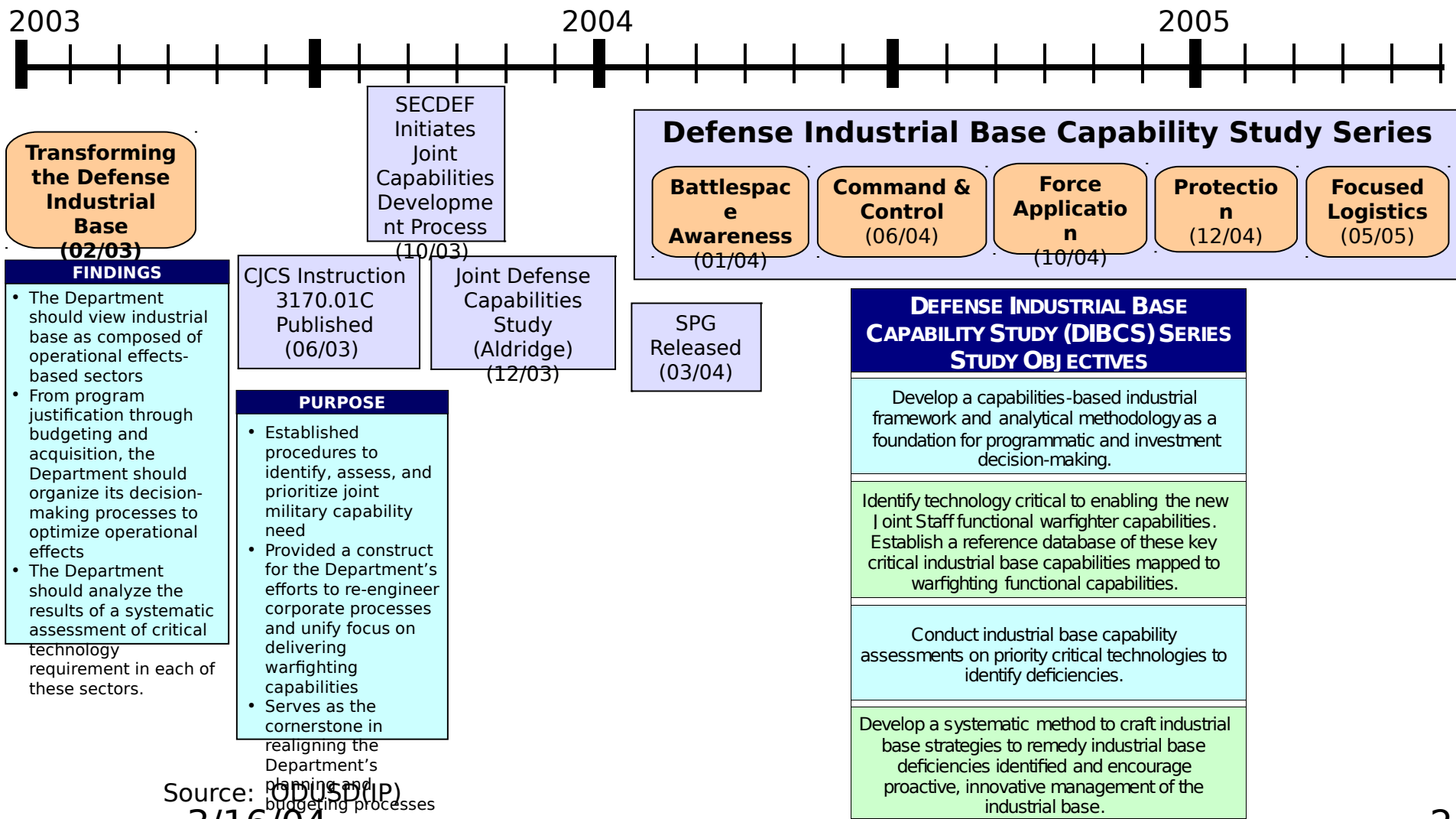
**Miss Suzanne Patrick  
DUSD (Industrial Policy)**



**April 13, 2004**



# Defense Industrial Base Capability Study Series in Context





# DIBCS Methodology: Battlespace Awareness Example

# 1

## Identify U.S. Leadership Goals for Capabilities

Capability	Degree of Leadership			
	Neutral	Equal	Be Ahead	Be Way Ahead
Observe & Collect Info World-Wide		Detect airborne EM transmissions	Detect and locate underground, man-made structures	Characterize conventional explosions
Analysis of Intelligence Info	Gather and analyze population trends	Set the boundaries of an adversary's network	Generate combatant position based on sensor data	Integrate various sensor inputs to depict the EM battlespace
Manage Knowledge	Display raw imagery data	Manage operationally significant information	Recover signal from a noise environment	Display analysis based on all source inputs
Model, Simulate & Forecast				Develop a model for predictive battlespace awareness

Decompose capabilities and identify functions to determine enabling technologies

# 2

## Determine Enabling Technologies for Be Ahead/Be Way Ahead Capabilities

### Critical Technology/ Industry List (270)

Long Wave Infrared Imaging  
Active Hyperspectral Imager  
Laser Interferometry  
Active Electronically Scanned Array Radar  
Maser Clocks  
Ground Penetrating Radar  
Lightweight, Broadband, Variable-Depth Sonar  
Ultrasonic Imaging  
Near Infrared Imaging  
Miniature Atomic Clocks  
Laser Induced Breakdown Spectroscopy  
Polymerase Chain Reaction  
...

Prioritize technologies to focus and scope assessments

# 3

## Assess Industrial Base Capabilities for Each Critical Technology

Technology Analysis	
Technology Analysis	
Technology Analysis	
Technology Analysis	
<b>Technology Description</b>	Briefly describe technology <ul style="list-style-type: none"><li>• Include key component technologies, if known</li></ul>
<b>Relevance to Warfighting</b>	Briefly describe relevance to warfighting capabilities.
<b>Technology Readiness Level</b>	Level 1-9. <ul style="list-style-type: none"><li>• Describe technology maturity</li></ul>
<b>Breakthrough or New Way of Doing Business</b>	Breakthrough/New Way of Doing Business/Neither. Justification sentences (include difference between tech that's proven or in development; apply to applications of today).
<b>Industrial Base Assessment</b>	
<b>Domestic Suppliers</b> (3 suppliers—include name, location, paragraph about company and showing relational statement to tech)	Describe type of suppliers (e.g., many small suppliers, few small suppliers, one large supplier) and name important companies in parentheses, comment on future viability where ascertained. <ul style="list-style-type: none"><li>• Include both R&amp;D and Production</li><li>• Assess domestic suppliers (identify up to three)</li></ul>
<b>Foreign Suppliers</b> (3 suppliers—include name, location, paragraph about company and showing relational statement to tech)	Describe type of suppliers (e.g., many small suppliers, few small suppliers, one large supplier) and name important companies and associated countries in parentheses, comment on future viability where ascertained. <ul style="list-style-type: none"><li>• Include both R&amp;D and Production, if possible</li><li>• Assess foreign suppliers (identify key firms)</li></ul>
<b>Market Assessment</b>	Describe future demand and characterize by sector and country/region. <ul style="list-style-type: none"><li>• Assess market supply and demand</li></ul>
<b>Technology Leadership Assessment</b>	Significantly Leads/Leads/Even/Trails/Significantly Trails. Indicate according to actual leadership vice desired leadership. <ul style="list-style-type: none"><li>• Assess U.S. technology leadership</li><li>• Show relationship to TRL and Breakthrough/NWODB</li></ul>

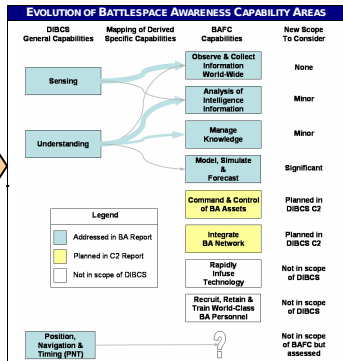


# The Defense Industrial Base Capability Study Series as a Lexicon: From Warfighting to Technology and Industrial Base Capabilities

## Operational Capability Framework

**BATTLESPACE AWARENESS FUNCTIONAL CONCEPT CAPABILITIES**

- Observe and Collect Information World-Wide
- Analysis of Intelligence Information
- Model, Simulate & Forecast
- Manage Knowledge
- Command and Control of Battlespace Awareness Assets
- Integrate Battlespace Awareness Network
- Rapidly Infuse Technology
- Recruit, Retain, & Train World-Class Battlespace Awareness Personnel



**BROAD INDUSTRIAL AREAS FOR BATTLESPACE AWARENESS**

Acoustic Sensing  
Chemical, Biological, Radiological and Nuclear Event Sensing  
Combination Sensing  
Environmental Sensing  
Electro-Optical Sensing  
Hyperspectral Sensing  
Information Technology  
Infrared Sensing  
Laser Sensors  
Magnetic Sensing  
Microwave Sensing  
Other Imaging  
Radar  
Radio Frequency Sensing  
Sonar  
Tagging  
Timing and Geopositioning Devices

## Technologies & Industrial Base Capabilities

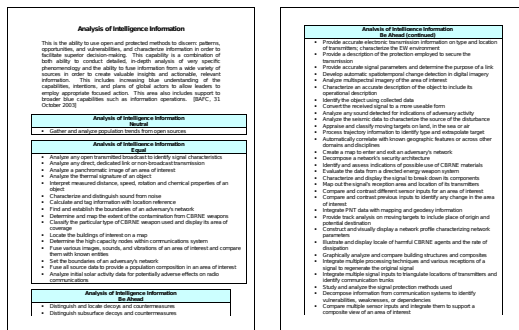
Technology	Industrial Base Sufficiency Analysis	
	Domestic Sources	Foreign Sources
Active Hyperspectral Imager	4	3
Active Electronically Scanned Array (AESA) Radar	2 major	5
Maser Clocks	2	3

**21 BATTLESPACE AWARENESS TECHNOLOGIES WITH SUFFICIENT INDUSTRIAL BASE CAPABILITIES**

Passive Acoustic, Seismic, and Electromagnetic (PASEM) and Effluent Sensing Techniques  
Laser Induced Breakdown Spectroscopy  
Polymersase Chain Reaction  
Hyperspectral Imager  
Long Wave Infrared Imaging  
Near Infrared Imaging  
Staring Dual Band Infrared Arrays  
Laser Interferometry  
LIDAR sensors with Autonomous Target Acquisition  
RF Emitter/Retainer Sensors  
Inertial Navigation System with Micro Electromechanical Systems (MEMS)  
Interferometric Fiber Optic Gyroscope  
Foliage Penetrating Synthetic Aperture Radar  
Ground Penetrating Radar  
Lightweight, Broadband, Variable-Depth Sonar  
Synthetic Aperture Sonar  
Atomic Clocks  
Laser Cooled Atomic Clocks  
Miniature Atomic Clocks  
Ultrasonic Imaging  
Ultraviolet Imaging

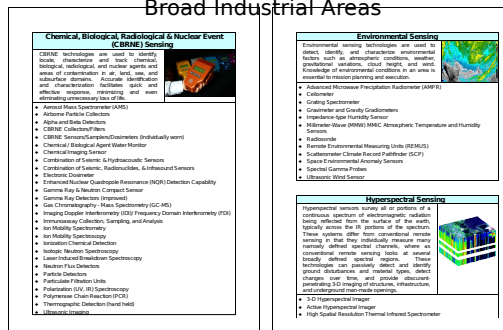
### Appendix A

#### DIBCS Battlespace Awareness Capability Framework



### Appendix B

#### Critical Technologies for Battlespace Awareness Organized by Broad Industrial Areas



### Appendix C

#### A Compendium of Representative Defense Technology Suppliers with Transformational Capabilities

Company Name	Address	Phone	Website	Technology	Company Name	Address	Phone	Website	Technology
Boeing	Boeing Building	206-426-7000	boeing.com	Aircraft	Boeing	Boeing Building	206-426-7000	boeing.com	Aircraft
Boeing	Boeing Building	206-426-7000	boeing.com	Aircraft	Boeing	Boeing Building	206-426-7000	boeing.com	Aircraft
Boeing	Boeing Building	206-426-7000	boeing.com	Aircraft	Boeing	Boeing Building	206-426-7000	boeing.com	Aircraft
Boeing	Boeing Building	206-426-7000	boeing.com	Aircraft	Boeing	Boeing Building	206-426-7000	boeing.com	Aircraft



# Functional Capabilities Applications in Defense Enterprise Strategies

Corporate Entity	Application	Utility
Government/Industry Program Managers	Decompose programs by functional capabilities/subsystems to assess applications for other platforms/ functions.	Facilitates cross-platform functional applications
Corporate Operating Groups and Military Services	Map operations by functional capabilities to better address customer needs and synergize corporate portfolio.	Provides benefits of functional view at corporate operating level and “common operating picture” across enterprise.
Corporations, the Defense Industrial Base, Defense Establishments, and supranational organizations	Assess business strategies based on consolidated view of existing capabilities relative to required capabilities.	Ensures common language among senior decision makers throughout the defense enterprise, better anticipatory capabilities, and more seamless access to markets/ technology



# Crafting Defense Business Strategies by Functional Capability

Actor	Objective	Process
<b>Emerging Defense Suppliers</b>  <b>Global Defense Suppliers</b>	Better access to U.S. Defense Industrial Base	<ul style="list-style-type: none"><li>• Map technologies by functional capabilities; overlay with U.S. functional capabilities.</li><li>• Assess which technology is/are gap fillers, innovate, or revolutionize existing capabilities.</li><li>• Develop business strategy targeting associated senior JCS/Department leadership, program managers, and companies.</li></ul>
<b>Coalition Partners</b>  Source: ODUSD(IP)	More effective coalition operations at less cost due to elimination of redundancy and optimizing capabilities	<ul style="list-style-type: none"><li>• Consolidate maps of military capabilities by functional areas.</li><li>• Assess gaps and overlaps relative to intended coalition missions.</li><li>• Rationalize outlays and harmonize requirements based on common operational objectives.</li></ul>



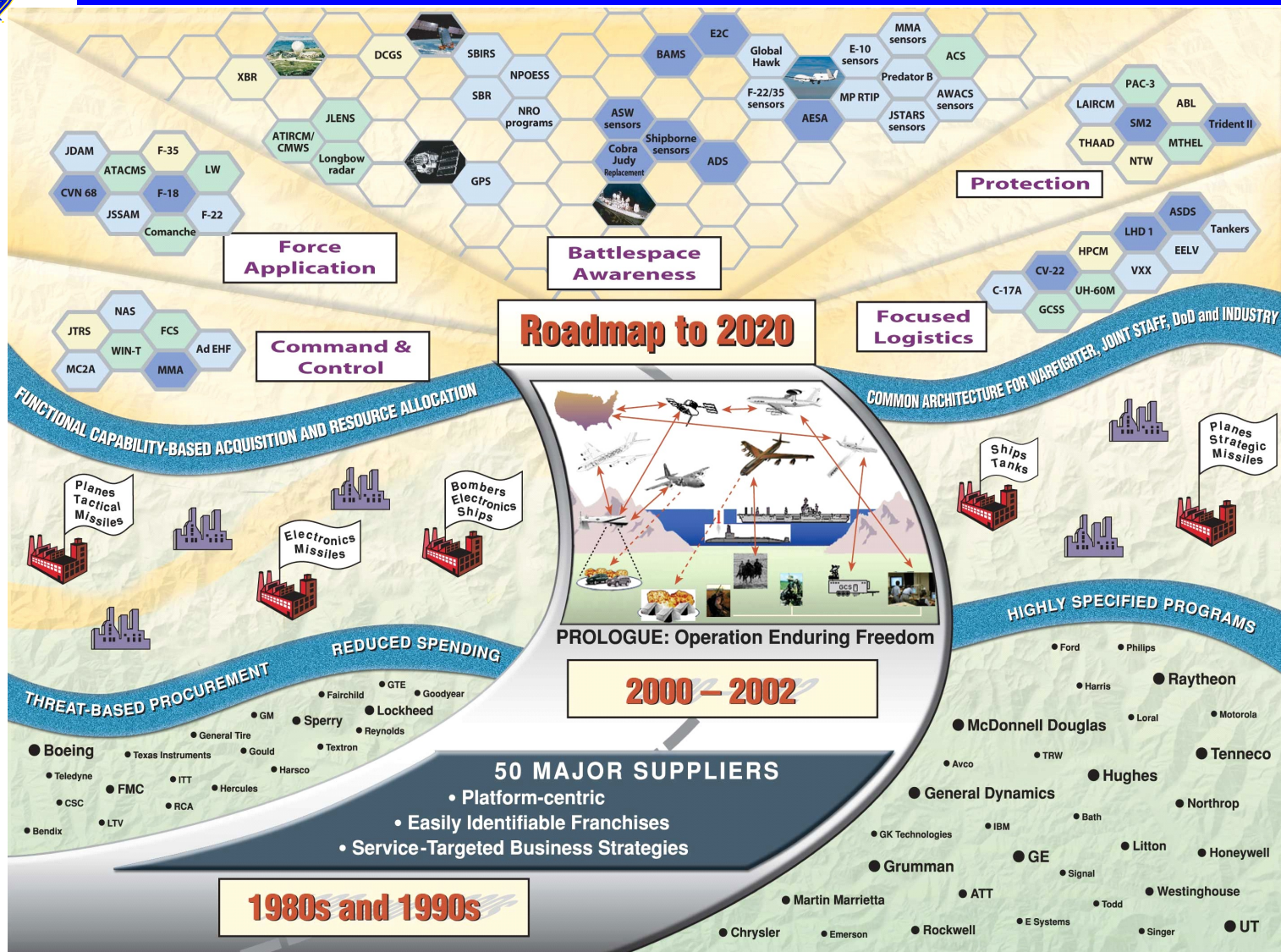
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# Backup





# Roadmap to the Future







# Joint Staff Functional Concepts

## **Battlespace Awareness**

Global Hawk, MPRTIP, NAS,  
Predator UAV (MQ9), NPOESS,  
SBIRS -High,  
Cobra Judy Replacement, E-2  
Advanced Hawkeye

Capabilities of commanders and all force elements to understand the environment in which they operate and the adversaries they face. Uses a variety of surveillance capabilities to gather information, maintain a secure network-centric environment to manage this information, and a collection of capabilities to analyze, understand and predict.

## **Command and Control**

GBS, AEHF, FBCB2, JTRS,  
SMART-T, WIN-T, MCS, NESF

Capabilities that exercise a commander's authority and direction over forces to accomplish a mission. Involves planning, directing, coordinating, and controlling forces and operations. Provides the means for a commander to recognize what is needed and ensure that appropriate actions are taken.

## **Force Application**

AMRAAM, DDG 51, GMLRS,  
JDAM, JSOW, CVN 21, MM III,  
SSGN

Capabilities to engage adversaries with lethal and non-lethal methods across the entire spectrum of conflict. Includes all battlefield movement and non-offensive and defensive combat capabilities in land, sea, air, space, and information domains.

## **Protection**

ATIRCM/CMWS, PAC -3,  
Chem Demil

Capabilities that defend forces and U.S. territory from harm. Includes missile defense and infrastructure protection and other capabilities to thwart force application by an adversary.

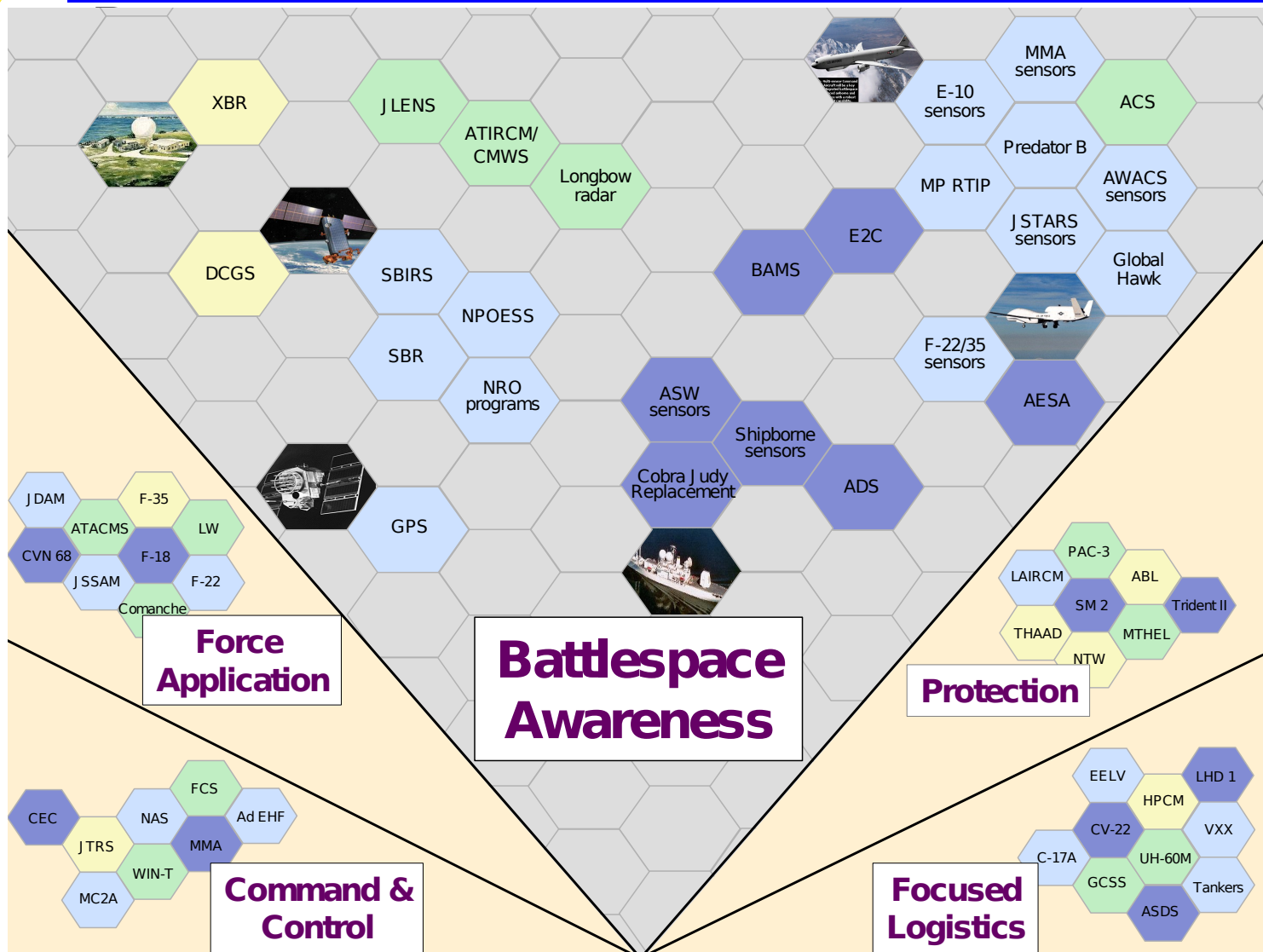
## **Focused Logistics**

LPD-17, C-130, CH-47, H-1  
Upgrades, GCSS, TAKE,  
T-45 Training System, A-17,  
C-5 RERP, FMTV, V-22, MH 60

Capabilities to deploy, redeploy, and sustain forces anywhere in or above the world for sustained, in-theater operations. Includes traditional mobility functions of airlift, sealift, and spacelift as well as shorehaul (intra-theater and battlefield) transportation. Also includes logistics C2, training, equipping, feeding, supplying, maintaining and medical capabilities.



# A Functional Capability View of U.S. Battlespace Awareness



Source: Adapted from *Defense Industrial Base Capabilities Study: Battlespace Awareness*, 3/16/04 (IP), January 2004 ([www.acq.osd/ip](http://www.acq.osd/ip))